REMARKS

Claims 1-6, 9-16, 19 and 20 are pending in this application. Claims 1-6 and 9-16 are currently being examined and claims 19 and 20 remain withdrawn from consideration. By this Amendment, the specification is amended to correct a typographical error, claim 8 is canceled; claim 1 is amended to incorporate the subject matter of canceled claim 8; and claim 3 is amended to properly depend from claim 1. Support for amended claim 1 can be found, for example, at page 9, lines 16-20, and page 13, lines 8-11. No new matter is added.

I. Rejections Under 35 U.S.C. §112

Claims 1-6 and 8-16 are rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Claim 8 is canceled, rendering the rejection moot. As to the remaining claims, Applicants respectfully traverse the rejection.

The Office Action alleges that Applicant did not have possession of the invention of the subject matter claimed at the time of the filing of the application. Moreover, the Office Action states, "Claims are broad. In all the examples xanthan gum and poly (ethyl acrylate: methyl methacrylate) 2:1 which appears to be the invention." See Office Action at page 5, lines 10-12.

As amended, claim 1 is directed to a sustained release pharmaceutical composition comprising a cephalosporin antibiotic, a mixture of polymers of galactomannans and a neutral swellable polymer, and other pharmaceutically acceptable excipients, wherein the galactomannans are selected from the group consisting of xanthan gum, guar gum and locust bean gum, and the neutral swellable polymer is poly (ethyl acrylate: methyl methacrylate) 2:1.

The specification teaches that the combination of xanthan gum and poly (ethyl acrylate: methyl methacrylate) 2:1 is a unique combination suitable for sustained release of active ingredients, which are to be administered once daily. See specification at page 9, lines 15-20 and page 13, lines 1-11. Moreover, the specification teaches that the polymers give a

pH independent release profile and that poly (ethyl acrylate: methyl methacrylate) 2:1 is available under the brand name of Eudragit NE 30D from Rohm Pharma Company. See specification at page 13, lines 1-2 and 8-11. Additionally, examples 1-8 each have a composition comprising a cephalosporin antibiotic, xanthan gum, and (ethyl acrylate: methyl methacrylate) 2:1. Still further, the specification clearly and unambiguously discloses that guar gum and locust bean gum can be used in the same manner as the exemplified xanthan gum. See specification at page 9, lines 16-18.

As a result, the originally-filed disclosure of the application reasonably conveys to one of skill in the art that the inventor had the possession of a sustained release pharmaceutical composition comprising a cephalosporin antibiotic, a mixture of polymers of galactomannans and a neutral swellable polymer, and other pharmaceutically acceptable excipients, wherein the galactomannans are selected from the group consisting of xanthan gum, guar gum and locust bean gum, and the neutral swellable polymer is poly (ethyl acrylate: methyl methacrylate) 2:1. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

II. Claim Rejections Under 35 U.S.C. §103

Claims 1-16 are rejected under 35 U.S.C. §103(a) as being unpatentable over Arora et al. (U.S. Patent No. 5,948,440) (hereinafter Arora) and Zhang et al. (U.S. Patent No. 6,083,532) (hereinafter Zhang). Claim 7 was previously canceled and claim 8 is canceled herein, rendering their rejection moot. As to the remaining claims, Applicants respectfully traverse the rejection.

As amended, claim 1 is directed to a sustained release pharmaceutical composition comprising a cephalosporin antibiotic, a mixture of polymers of galactomannans and a neutral swellable polymer, and other pharmaceutically acceptable excipients, wherein the

galactomannans are selected from the group consisting of xanthan gum, guar gum and locust bean gum, and the neutral swellable polymer is poly (ethyl acrylate: methyl methacrylate) 2:1.

The Office Action asserts that Arora teaches a pharmaceutical composition for controlled release of an active ingredient but it does not teach a composition containing xanthan gum, guar gum, and/or locust bean gum. However, the Office Action asserts that Zhang teaches a sustained release pharmaceutical composition, which contains a xanthan gum.

The Office Action fails to consider each and every limitation of claim 1. Claim 1 is directed to a sustained release pharmaceutical composition comprising galactomannans and a neutral swellable polymer. Neither Arora nor Zhang disclose, teach or suggest a sustained release pharmaceutical composition comprising a neutral swellable polymer.

Moreover, the Office Action admits that Arora does not teach the use of xanthan gum, guar gum, and/or locust bean gum, but asserts Zhang teaches sustained release pharmaceutical compositions containing xanthan gum. Therefore, the Office Action asserts that it would have been obvious to one of ordinary skill in the art to use a mixture of polymers because Arora teaches a mixture of hydrophilic polymers and to use xanthan gums in the place of hydrophilic polymers as taught by Zhang in preparing a sustained release formulation. Applicants disagree.

As taught by the specification, Applicants found that when xanthan gum was used alone, the initial release of cephalosporin was rapid; and when eudragit NE 30 D (the claimed neutral swellable polymer) was used alone, the integrity of the formulation was lost after two hours. See specification at page 11, lines 11-14 and page 12, lines 11-14. However, Applicants unexpectedly found that when a formulation comprising a combination of xanthan gum and eudragit NE 30 D comes into contact with the aqueous media of the gastrointestinal

tract, the thin film of eudragit controls the penetration and initial erosion of the xanthan gum and subsequently releases uniformly over a period of time.

Zhang et al. does not teach sustained release formulation of cephalosporin. Rather, the composition of Zhang utilizes three components for achieving sustained release: 1) a pH dependent gelling polymer such as an alginate component; 2) an enteric polymer component, such as eudragit® L or S; and 3) a pH independent gelling polymer. Xanthan gum is the third component, a pH independent gelling polymer. One of ordinary skill in the art would not have been motivated to pick only xanthan gum out of these three components, rather than all three components together, and combine it with the teachings of Arora. Nowhere does Zhang et al. teach or suggest that sustained release properties of its three-component formulation would be provided by only one of the specific components in an entirely different formulation.

Furthermore, the claimed invention uses a combination of pH independent polymers belonging to different chemical classes, which behave differently in gastric fluids. Thus, it would not at all have been obvious to one of ordinary skill in the art to predict how a combination of pH independent polymers (xanthan gum and eudragit NE 30 D) would behave in the varying chemical environments of the gastrointestinal tract, because they are from different chemical classes and have different physical characteristics. Moreover, their mechanism of sustained release is also not obvious. Neither Arora nor Zhang, alone or in combination, teach or suggest such a combination of pH independent polymers as a sustained release pharmaceutical composition.

The composition of the present invention is such that the pH independent swellable polymer eudragit NE 30 D forms a sponge-like structure and slowly hydrates without disrupting the hydrophilic composition formed by the heteropolysaccharide (xanthan gum). The sponge-like structure behaves as an inert matrix and once the xanthan gum is completely

hydrated, it forms a gel. Then, the release of the active ingredient is governed by the diffusion and dissolved through pores, channels and capillaries of the insoluble polymer composition. The integrity of the formulation is maintained over a substantial period of release. The matrix of the claimed invention behaves differently in achieving the sustained release to that of the hydrophilic matrix of Arora and the three component matrix of Zhang.

Because neither Arora nor Zhang, alone or in combination, teach or suggest a sustained release pharmaceutical composition comprising a galactomannans and a neutral swellable polymer, claim 1 would not have been obvious in view of Arora and Zhang. Claims 2-6 and 9-16 variously depend from claim 1 and, thus, would also not have been rendered obvious by Arora and Zhang. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

III. Conclusion

Entry of the amendments is proper under 37 CFR §1.116 because the amendments: (a) place the application in condition for allowance for the reasons discussed herein; (b) do not raise any new issue requiring further search and/or consideration as the amendments amplify issues previously discussed throughout prosecution; (c) satisfy a requirement of form asserted in the previous Office Action; (d) do not present any additional claims without canceling a corresponding number of finally rejected claims; and (e) place the application in better form for appeal, should an appeal be necessary. The amendments are necessary and were not earlier presented because they are made in response to arguments raised in the final rejection. Entry of the amendments is thus respectfully requested.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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